Application No. 10/734,232

Amendment dated September 20, 2005 After Final Office Action of May 20, 2005 Docket No.: 2993-0115P

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A chemical mechanical planarization abrasive composition, which

comprises non-polymeric organic particles in a concentration of 0.001 - 20 w/w % as an abrasive

material, 0.1-10 w/w% of an oxidizing agent, 0.05 - 10 w/w % of a chelating agent, 0.01 - 10

w/w % of a surfactant, 0 - 10 w/w % of a passivation agent and a-solvent soft water in the form

of a slurry, wherein the non-polymeric organic particles have an average particle size of less than

1 μm inherently have an intermolecular hydrogen bonding property.

2. (Original) The abrasive composition according to claim 1, wherein the non-polymeric organic

particles consist essentially of at least one compound selected from the group consisting of

melamine and a derivative thereof.

3. (Canceled)

4. (Original) The abrasive composition according to claim 1, wherein the non-polymeric organic

particles contain at least one functional group selected from the group consisting of amino,

amido and metal salt thereof.

5. (Currently amended) The abrasive composition according to claim 1, wherein

essentially all of said particles have a size distribution between +75% and -75% of the average

particle size.

Application No. 10/734,232 Amendment dated September 20, 2005

After Final Office Action of May 20, 2005

6. (Canceled)

7. (Currently Amended) The abrasive composition according to claim 6, claim 1, wherein the

slurry has a pH in the range of 2 - 12.

8. (Currently Amended) The abrasive composition according to claim 6, claim 1, wherein the

oxidizing agent is at least one selected from the group consisting of peroxide, chlorate, chlorite,

perchlorate, bromate, perbromate, nitrate, persulfate, iodate, permanganate and

hypochlorite.

9. (Currently Amended) The abrasive composition according to claim 6, claim 1, wherein H₂O₂

is the oxidizing agent and is present in an amount of 0.1 - 6 % w/w.

10. (Currently Amended) The abrasive composition according to elaim 6, claim 1, further

comprising a complexing agent which is at least one selected from the group consisting of

polyamine, polyaminocarboxylic acid and an amino acid.

11. (Previously presented) The abrasive composition according to claim 10, wherein the

complexing agent is an amino acid.

12. (Currently Amended) The abrasive composition according to elaim 6, claim 1, wherein the

surfactant is a nonionic surfactant.

Docket No.: 2993-0115P

13. (Currently Amended) The abrasive composition according to elaim-6, claim 1, wherein the

surfactant is at least one selected from the group consisting of an alkylated polyethylene oxide,

an alkylated cellulose, an alkylated polyvinyl alcohol, an alkyl carboxylic acid, an aryl

carboxylic acid, a sulfate salt and an ammonium salt.

14. (Currently Amended) The abrasive composition according to elaim 6, claim 1, wherein the

slurry further comprises at least one of inorganic abrasive particles and polymeric abrasive

particles.

15. (Original) The abrasive composition according to claim 14, wherein the slurry further

comprises polymeric abrasive particles and said polymeric abrasive particles are formed by

combining a substituted or unsubstituted formaldehyde, and at least one of (a) a substituted or

unsubstituted melamine, (b) a substituted or unsubstituted urea, (c) a substituted or unsubstituted

phenol and (d) a substituted or unsubstituted resorcinol.

16. (Original) The abrasive composition according to claim 14, wherein the slurry further

comprises inorganic abrasive particles which are at least one selected from the group consisting

of SiO₂, Al₂O₃, ZrO₂, CeO₂, SiC, Fe₂O₃, TiO₂, Si₃N₄ and diamond.

17. (Currently Amended) The abrasive composition according to elaim 6, claim 1, wherein the

passivation agent is at least one selected from the group consisting of benzotriazole,

Docket No.: 2993-0115P

Application No. 10/734,232

Amendment dated September 20, 2005

After Final Office Action of May 20, 2005

benzothiazole, 1 H-benzotriazoleacetonitrile, benzotriazole-5-carboxylic acid, 2(3H)-

benzothiazolone, and 1 H-benzotriazole-1-methanol.

18. (Currently Amended) A chemical mechanical planarization process, which comprises:

applying to a surface of a semiconductor the chemical a chemical mechanical planarization

abrasive slurry composition of claim 1 which comprises non-polymeric organic particles as an

abrasive material, 0.1-10 w/w% of an oxidizing agent and a solvent.

19. (Previously Presented) The chemical mechanical planarization process of claim 18, wherein

the solvent is soft water, the non-polymeric organic particles are present in a concentration of

0.001 - 20 w/w %, and the slurry further comprises 0.05 - 10 w/w % of a chelating agent, 0.01 -

10 w/w % of a surfactant, and 0 - 10 w/w % of a passivation agent.

20. (Canceled)

21. (Previously Presented) The chemical mechanical planarization process of claim 18, wherein

the composition of the surface of the semiconductor comprises copper and the slurry further

comprises inorganic abrasive particles.

22. (Canceled)

Birch, Stewart, Kolasch & Birch, LLP

Page 5 of 9

Docket No.: 2993-0115P

Docket No.: 2993-0115P

Application No. 10/734,232 Amendment dated September 20, 2005 After Final Office Action of May 20, 2005

23. (Previously Presented) The chemical mechanical planarization process of claim 18, further

comprising a preliminary step of reducing the size of the abrasive non-polymeric organic

particles in the presence of an anionic surfactant prior to combining the abrasive non-polymeric

organic particles in the chemical mechanical planarization abrasive slurry composition.